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ABSTRACT

Described is a system for evaluating a child's learning pattern. It is explained that the evaluation is based on a social history, visual screening (including acuity, functional skills, pursuit skills and binocularity skills), auditory evaluation, motor assessment, and academic testing. (CL)

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MULTI-SENSORY PERCEPTUAL EVALUATION

OR

"HOW DOES THIS CHILD LEARN?"

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Abstract

The goal of this paper as presented to the Council for Exceptional Children Conference in Atlanta, April 1977, is to share one system of evaluating a child's learning pattern. The emphasis is on need for input from a number of professional areas. This need became clear via experience with testing 500 children over the past several years. The auditory and academic areas are relatively familiar. The motor coordination as it relates to academics is less universal. The functional vision area remain both controversial and yet well worth serious consideration.

Introduction

There is much controversy today over who tests for what and why. Only a small portion of this paper is devoted to who or even what measures. The more important facet is WHY? Why test movement coordination? Why did this team find we needed more specific visual information? Why test auditory directionality? Why spend time on obtaining a complete social history? Experience has strengthened our feelings as to the rationale for involving a balanced auditory, visual, motor, social and academic assessment of any child.

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Gesell and Amatruda list five fields of behavior to be diagnosed:

1. Adaptive
2. Gross Motor
3. Fine Motor
4. Language
5. Personal-Social

> "Adaptive behavior, the most important field, is concerned with the organization of stimuli, the perception of relationships, the dissection of wholes into their component parts and the reintegration of these parts in a meaningful fashion." [1]

In order to place statements in perspective a brief format of the evaluation system is as follows:

- Intake Call
- Check with related sources
- Home Interview
- Testing of Child (parent observes)
  - Approximately 45 minutes each for the following areas:
    1. academic/social
    2. motor
    3. visual
    4. auditory-language
- Summary for parent (child)
- Written reports to whomever parent indicates, mailed within 10 days
- Referrals to other professionals with deadline for report back
- Followup Conference
  1. Explanation of report
  2. Discussion of specific recommendations and remediation materials

It is our philosophy that the evaluation should be parent-centered. If that parent cares enough to bring the child for the better part of a day and/or pay for testing, his concern involves meaningful knowledge of the child's situation. Many parents explain they have known there was a problem for a long time, but no one would listen to them. An outspoken mother spontaneously explained after a lengthy intake phone call, "I'm so glad you listened. You're the first one who would. By the time a parent reaches you they are already labeled a "kook" by the rest of the world." It takes relatively few minutes to listen to a parent's version or description of the problems. During this time we gather some valuable notes as to development, acceptance, attachment, guilt, and goals.

Britten, Richardson and Mangel in their book, Something's Wrong With My Child, tell parents what to expect from any professional working with their child.

> "He must be willing to take the time to listen patiently to what you have to say. He must understand that the parents of this child undergo their own kind of private hell. You should be able to express to him, openingly and fully, your torments, your fears for the

future of your child, and your own weariness and frustration. Too many professionals are curt. Too many look at a youngster who seems healthy and immediately shut his parents off. Such men and women give parents the feeling that they have little time to discuss problems in full, that a lengthy discussion insults their professional dignity or encroaches on the time of another client." [2]

SOCIAL

After a referral is made, the initial contact is with the home interviewer, or social worker. The role of the home interviewer is to gather data on the child who is to be evaluated. As part of the diagnostic team, the interviewer gathers background information in the medical, developmental, and social areas to be used by other team members as a screening tool. This information which is gathered from the parents gives the other professionals in the evaluation process some indications of possible involvement in particular areas.

For example, the motor specialist would be particularly interested in the medical history, developmental lags or spurts, injuries, traumas, or problems with balance or coordination. The visual specialist would be interested in knowing of any previous vision tests, symptoms or strain, headaches, etc.

The data is gathered from parents in their homes and includes contact with such ancillaries as teachers, counselors, caseworkers, and pediatricians. If convenient for parents, the home interviewer schedules the visit when the child who is to be evaluated is at home so that he might be observed. The information is gathered orally and notations are made as the history of the child is discussed. Our approach is informal and without rigid structure so as to be non-threatening to anxious parents.

The form used screened the following areas:

SOCIAL WORK EVALUATION

I. Medical history
   - A. Pre-natal
     - Length of pregnancy, falls, injuries, accidents, illnesses
     - Problems: toxemia, prematurity, injuries at birth
   - B. Neo-natal
     - Labor and delivery, birth weight, Apgar rating
     - Problems: incubator, oxygen, jaundice
   - C. Health (Pediatrician often contacted)
     1. Significant childhood illnesses: measles, mumps, chicken pox
     2. High fevers, hospitalizations, emergency room
     3. Injuries, convulsions, unconsciousness, falls
     4. Allergies, sleeping and eating habits, bedwetting, size, headaches, medication
     5. Significant family health history: school problems, epilepsy diabetes, allergies, learning disabilities, hyperactivity

6. Results of any eye, hearing exams

II. Developmental history
   A. Infancy
      1. When held head, fed self, crawled, walked (lags, spurts)
      2. Problems with developmental milestones
      3. Favorite things, activities
   B. Toddler
      1. When talked (speech development), toilet training, ride trike
      2. Coloring, cutting, fine motor, manipulation of hands
   C. Youth
      1. Problems with balance, walking into things, coordination, skipping, jumping, riding a bike, throwing, control of hands, preference for which hand (confusion)
   D. Parent's description of child's personality, temperament, attention span

III. Social history
   A. Family
      1. Marital situation, ordinal position
      2. Relationship with parents, siblings, role in family
      3. Any significant family problems
   B. School
      1. History, attitude, success or failure
      2. Significant problems
      3. Status of any other testing
   C. Social
      1. Relationship with peers, self confidence, how does he feel about himself
      2. Preference for hobbies, recreation, social activities
   D. Problem
      1. Description by parent, enables parent to ventilate guilt
      2. Description by child when appropriate
      3. History, origin
      4. Source of referral

IV. Ancillary
   A. Contact teacher
   B. Any social agency working with the child
   C. Pediatrician

V. Recommendation or confidential information for Diagnostic Coordinator
   A. Something parent shares that is of a confidential nature and need not be included in a written report, yet may be of significance in evaluating the child.

In discussing the child with the parents, two functions are served: the diagnostic team gains insight and information about the child and the parent is able to gain insights into their child's behavior and development. The social worker can help the parent verbalize any guilt they may have and hopefully assist the parent in working through of this guilt.

VISUAL SCREENING

When a child is tested because of poor academic performance, the tester makes at least two assumptions concerning the skills being measured:

1. the ability that is measured has an affect on how this child learns (or is a measure of the academic performance itself)
2. the ability that is measured can be changed or an attempt can be made to change it, if the child does not perform on an adequate level.

These two assumptions are made when a tester determines to evaluate the vision of a child. That is, the tester believes that vision itself has an affect on the child's learning pattern, and that it can be changed if inadequate. Gesell has stated,

> "Indeed, vision is so intimately identified with the whole child that we cannot understand its economy and its hygiene without investigating the whole child... Acuity is only one aspect of the economy of vision... paradoxically enough, high acuity is sometimes associated with low reading ability."[3]

Regardless of the theoretical point of view of the tester, vision is a primary factor in every testing situation. Over 85% of the information processed by a child is through vision. Many tools used to assess a child's performance demand that the child use information gained visually in order to respond. How a child is able to use information from the visual modality is measured over and over by all testers.

As a result, disturbances in the visual system that may be affecting the child's performance need to be identified. Vision, or how visual information is received and processed, must be teased out as a separate variable and then assessed. As defined by Getman,

> "Sight is the response of the eye to any light that enters it. The eye will align with the source of light to gain the most even distribution of light across the retina; the pupil of the eye will dilate or constrict according to the intensity of the light that is entering the eye. Sight is the alerting process that allows the eye to set itself in readiness for seeing...Vision is the learned ability to see for information and performance. Vision is the ability to understand things we cannot touch, taste, smell, or hear. Vision is the process whereby we perceive space as a whole."[4]

Vision, then, is more than a peripheral reaction of the pupil to light or the change in shape of the lens to focus demands, it is a central function as well. The interest of the tester lies in which peripheral functions of the eye will affect the central processing of information and consequently learning.

Isolating vision and its functional abilities is not simple, as one can surmise from the above definition. The complexities of vision cannot be overemphasized. The Snellen charts, for example, may give a tester a clear picture of sight capabilities, but leave the visual system untouched. Clearly, vision must be broken down into component functions that can be measured and analyzed.

Knowing which skills are appropriate to test is important, and we must rely on the vision specialists and their capabilities. The tests described below are merely screening devices, and in no way give authoritative, complete vision information. If the tester notes difficulties in any of the skills listed below, referral to an optometrist or opthalmologist is indicated. The tests will provide information to be integrated into the overall diagnostic picture of the child.

The first skill to be assessed is the ability to "look at" something until all the necessary information is received from the stimulus. FIXATION is the act of directing the eyes toward an object causing the image to be centered on the fovea.[5] Often, inability to attend can be viewed as the inability to fixate visually. As Dr. Wm. Ludlam has noted, when someone says "pay attention" what is really meant is "fixate me".[7] Being able to sustain a fixation is essential for all of the school oriented tasks.

Secondly, the child must possess the ability to move his eyes smoothly to follow a stimulus, whether it be to catch a ball or to read a line of print. Ocular PURSUITS or eye movements determine the quality of information received by the brain. The child with inadequate pursuit skills may depend on the more reliable pointing of his finger during reading. He may rely on head movements and not eye movements in attempts to follow targets.

The next skill to be assessed is how the eyes are related to each other or BINOCULARITY. The advantages and problems created because we have two eyes are terrific. The child that does not keep the eyes working smoothly together may compensate in a number of ways. You may see a child with an eye that turns in or out, or you may find a child who centrally blocks information from an eye. Fusion, or the central merging of the two inputs into one will be absent.

If one thinks about the eye and all of the functions it performs, focusing is probably next considered.[8] ACCOMODATION, or the change in shape of the lens to gain a clear focus, is essential. The complexities of focusing can be understood when we think of the great demands placed on this system. Even though we may change focus distance many times in a few seconds we never experience even a split second of blurriness during a focus change.

For every change in distance of an object being fixated, there are at least two changes taking place peripherally. The focus mechanicsm will react along with a convergence or divergence of the two eyes. This is one example of the coordination or integration of the various skills within the eye.

Lastly, we need to consider the types of eye movements we use in reading. The efficient adult reader's eyes literally take jumps across a page, making stops or fixations. This quick pursuit followed by a fixation is called a saccadic movement. This skill also needs to be part of a visual skills assessment.

Observation and assessment of these skills can be accomplished with the use of a variety of instrumentation and tools. The following is an example of a visual screening battery:

I. Acuity - Snellen chart

II. Functional Skills - Keystone School Vision Screening Test
  A. Farpoint Tests
    1. Simultaneous vision
    2. Vertical posture
    3. Lateral posture
    4. Fusion
    5. Usable vision
  B. Nearpoint Tests
    1. Lateral posture
    2. Fusion
    3. Usable vision

III. Pursuit Skills
  A. Tracking of object of both monocular and binocular base
  B. Groffman Tracing Test
    1. Normative data on nearpoint tracking ability

IV. Binocularity and Fusion Skills
  A. Cover Test
  B. Skeffington String Test

V. Accomodative and Convergence Tests
  A. Near to far and Far to near focus changes
  B. Convergence ability as measured by observation

VI. Spache Binocular Reading Test
  A. Information concerning use of both eyes during reading

VII. Saccadic Fixation Test
  A. Normative information on saccadic movement ability

Through the administration of the above tests, an attempt is made to obtain an overall picture of visual functioning: Is the visual input consistent for this child? Are general fixation and sustaining abilities adequate? What adaptations seem to be taking place when visual problems are seen?

In conjunction with the above functional vision tests, measures are taken of the child's visual PERCEPTION abilities. In other words, what happens to the visual information as it is processed and used by the child. The following can be used to determine visual perception inadequacies:

I. Motor Free Visual Perception Test
  A. Visual discrimination
  B. Visual figure-ground
  C. Visual memory
  D. Visual closure

II. Developmental Test of Visual Perception (Frostig)
- A. Eye-motor coordination
- B. Visual figure-ground
- C. Form constancy
- D. Position in space
- E. Spatial relations

A Preschool test of visual acuity and a selection of tests from the Keystone School Vision Screening are used when children are not school age.

To put our information into a more useful form, let's consider John, a child seen because of behavioral and academic difficulties.

CASE HISTORY

Child: John
Age: 7-8
History: Developmental milestones reached at early, normal age in all areas
Borderline promotion from first to second grade this year ("immature")
Expresses need to be accepted by others
Teacher reports:
--difficulty with phonics
--poor fine motor coordination
--retention of patterns in reading and math is weak
--spelling is poor
--John is disorganized

Test Results

Academic

PIAT:
Spelling 2.0
General Information 4.1

WRAT:
Spelling 2.0

Woodcock Reading Mastery Test:	Reading Grade
Letter Identification	1.7
Word Identification	1.8
Word Attack	2.0
Word Comprehension	2.0
Passage Comprehension	2.0
Total Reading	1.9

Spache:
2nd grade instructional level

Key Math
(Only those of significance listed - all others in average range)

Subtraction	1.5
Addition	3.4
Numerical Reasoning	3.3

Word problems .7
Measurement 4.3
Average Total of Test 2.6

VISUAL

Acuity: 20/20
ITPA Visual Sequential Memory: Above 10-5 ceiling
Jordan Left-Right Reveral Test: Within normal limits
Motor Free Visual Perception Test: visual closure was the only difficult subtest
Keystone School Vision Screening: all areas were adequate
Spache Binocular Reading Test: good
Cover test: normal
Skeffington String Test: good binocularity
Groffman Tracing Test: not given due to poor pursuit skills
Pursuit skills: Difficulty in following target, overshooting jerkiness, etc.

VISUO-MOTOR

Developmental Test of Visual Perception (Frostig)

	Age Equivalent	Scaled Score
Eye-motor coordination	7.9	10
Figure-ground	4.6	6
Form Constancy	9.0	12
Position in space	6.3	8
Spatial Relations	7.6	10

Beery - Test of Visuo-motor Integration: 6-5 visuo-motor age
Goodenough Draw a Man: small figure at bottom of paper, lacking detail

MOTOR

Ayres SCSIT:
Ayres profile shows functioning generally at zero percentile with the exception of crossing the midline test. John was confused as to mirroring the action or responding exactly.

AUDITORY-LANGUAGE

PPVT: Vocabulary Age 8-2
Audiometric Screening: within normal limits
GFW: Quiet: normal limits
Noise: Below normal limits
ITPA: Auditory Reception: 4-7 (Age equivalent)
Auditory Association: 7-3
Auditory sequential memory: 5-8
Detroit: Oral Directions: 6-3
Auditory Attention Span for Related Syllables: 5-0
Auditory Attention Span for Unrelated Syllables: below scoring level

Observations

John frequently asked for clarification of verbal directions. Visual forms (sometimes words) can be confusing. John converses easily and expresses meaningful insights. He does not seem to envision a process or form. Visual or auditory to motor integration is confusing.

Recommendations

1. Discussion with school personnel as to decision on repetition.
2. Provide positive feedback wherever possible, John is anxious to please.
3. Immediate attention to auditory memory:
    a. classroom exercises
    b. home suggestions
    c. enroll in Children's House therapy, two sessions per week, sessions to also include visuo-motor work.
4. Specific Math objectives
5. Incorporate visuo-motor work to increase monitoring, improve form constancy and spatial awareness.
6. Consider summer school enrollment (6 weeks) to continue individualized programming in preparation for fall work.
    a. Auditory Memory
        Expand critical listening (monitoring) skills
        Increase auditory sequential memory for instructions
        Improve ability to followup on auditory-motor commands
    b. Auditory Discrimination
        Direct phonics (sound to symbol) work
        Specific listening for sound in words differences in presence of noise
        Followup of verb commands with noise
    c. Organization in space and on paper
    d. Form constancy and discrimination
    e. Self Image (Good strokes as a student and friend)

John's visual difficulties lie mainly in the areas of nearpoint pursuits and near-far focus flexibility. Teacher complaints of poor reading, sequencing of letters as in spelling and difficulty in writing tasks can be partly attributed to his poor eye following skills. John prefers use of his finger and exhibits a great deal of head movement when reading.

Near-far focus flexibility problems express themselves in John's copying problems. (blackboard to paper) His inability to sustain nearpoint work for any length of time may also be indicative of focus inflexibility at nearpoint.

These observations together with the auditory and motor deficiencies give us good clues as to John's problems in the classroom.

In summary, the need is recognized for assessment of visual skills in the diagnostic testing of a child. Confounding of this variable when determining a child's inadequacies will only lead to incorrect diagnosis and ineffectual remedial teaching.

AUDITORY

The rationale strongly focused upon here is simple: children must be able to make sense of what they hear! This involves source of sound, figure-ground, discrimination, imagery, sequencing, memory and auditory association. As Frostig and Maslow point out,

> "In space: An auditory ability that has survival value is locating the source of a sound.
> In time: The reception of auditory stimuli always occurs in a given time sequence"
>
> "The importance of such training cannot be overemphasized."[9]

Somehow these perceptual terms are easier to understand under an auditory umbrella rather than visual. All areas mentioned are directly analogous to visual skills. (The Frostig-Maslow book charts the two side by side.)

Refer to the case history of John. Initially auditory memory and auditory sequential memory were believed to be quite low. During followup auditory therapy, we realized short term or short message memory was in fact quite strong. Poor auditory discrimination played an essential role in making lengthy recall more difficult. Also, John could not easily envision what he was told to do. Auditory imagery and spatial awareness were weak. (Causal relationship?) Therefore, his plan of action was not clear, and memory followup failed. John's auditory directionality was quite good, but auditory distractibility was a practical problem. Discrimination became further depressed in the presence of classroom noise. Auditory figure-ground and memory weaknesses added up to a child who "wasn't getting the message in school."

Specific auditory skills in a variety of environments must be both tested and observed. Our limited auditory directionality research (Paper presented New York, CEC, 1974) revealed greater localization confusion amongst our diagnosed LD population than within the "normal" control group. The study was conducted within our self-constructed Audi Perceptorator Booth. This was a brainchild of two of our speech therapists developing an aspect of auditory laterality. If a child preferred one hand (eye, foot, side) or confused such, could this not also happen auditorily? It began as playful curiosity, one knocking on the side of a Cruikshank type booth while the other work with and observed the child inside. Then we tried a tape recorder in various positions in a darkened room. Eventually we constructed a tool shed with carpeting, a TV monitor and five speakers - one on each wall and one in the center of the ceiling. The child lies on a cot or works at a desk, equidistant from the speakers. The therapist fed auditory input into determined speakers via a control outside. The second therapist observed and coded the results. We used neighboring Montessori children as a control group. There was a greater degree of confusion evident in our LD children. Responses were more varied and more inconsistent. One child never could locate the source of the sound.

The booth is used now as a diagnostic tool and for therapy followup. We administer the audiometric, GFW, and ITPA auditory subtests in that setting. We try to informally assess directionality and reaction to simple or complex sound.

Language skills should be evaluated on the basis of expressive and associative abilities beyond the receptive areas mentioned. We have found an apparent high correlation between vocabulary level and reading level especially in the weaker ranges. Auditory-visual, auditory-motor, and auditory-verbal patterns need careful analysis when all initial diagnostic information is in. Here creative and flexible diagnostic team members are essential.

MOTOR

McCarthy and McCarthy in their book Learning Disabilities state,

> "Three areas of major concern in a psychological evaluation are intellectual, visual-motor-perceptual, and personality functioning."[10]

Too often the second mentioned is slighted in a diagnostic evaluation. The ways in which a child moves in response to auditory, visual and other input also requires an indepth evaluation.

Movement is an ongoing response to all stimuli. Even while seated, your body is continually making postural responses. Another example of this base line of movement is the response of the eye muscles to thought. Imagine serving a tennis ball. The focus mechanism in your eye makes the response of an actual serve. Movement is constant and ongoing.

The integration of movement with the other modalities is essential for adequate functioning. First of all, because movement is ongoing and secondly, movement is the oldest sensory modality ontogenetically, beginning during fetal life. Studies on the growth and development of the child[11,12,13] give the motor data priority, since movement precedes awareness.

At one month the fetus responds to touch, that is, tactile input is being processed. At four to five months, the vestibular or balance system begins functioning as the fetus responds to changes in mother's position. At six to seven months, joint and muscle nerve endings have developed. The fetus develops subsequently in the areas of audition and vision as demonstrated by the response to loud noises, mother's rhythmic heartbeat and other sounds in his environment.

The combination of input from tactile, vestibular and muscles, tendons and joints is labelled kinesthesia. Kinesthesia is the processing of this internal stimuli into a sense of posture, weight and movement. The infinite ways in which a child moves his limbs and his many activities involving movement and balance are the basis upon which we develop perceptual and conceptual skills. All that a child learns is dependent upon early movement. Mind and body are not separate entities.

To experience kinesthesia, the perception of posture, weight and movement. compare your standing balance on one foot with eyes open and closed. This brief demonstration illustrates two points: first, that vision and balance are integrated; 20% of the information from the vestibular mechanism is fed into the visual system. Secondly, you find that many adjustments must be made to maintain balance when vision does not provide input.

Instruments and procedures of evaluation require movement responses which are age appropriate to the individual child. The tester generally looks for well integrated and coordinated movements. The evaluation also includes testing of reflexes. Reflex integration and usage prepares the child for progression of development. Reflexes, which are maintained for too long of a time so that normal development is interrupted, are called pathological. These and other neurological signs are often indicative of a learning difficulty.

The Purdue Perceptual Motor Survey is utilized to assess the child's movement ability in the areas of: balance, posture, body image, perceptual-motor match, ocular control and form perception. Kephart describes the necessity of such testing,

> "The essence of the perceptual-motor theory is a sequence of learning stages through which the child progresses. Later complex learnings are built upon initial learnings in a hierarchical fashion." [14]

> "There are many motor actions available to the individual which permit him to respond and relate to environmental stimuli in a meaningful consistent manner. Without such basic patterns, he has difficulty in the generalization of learning experiences." [15]

Chalkboard tasks (such as copying simple motifs), balance beam walks. and other movement responses are observed. Also evaluated as to age appropriateness are: unilateral movements (one limb), bilateral controls (both upper and lower limbs), ipsilateral (arm and leg on same side) and contralateral movements. (arm and leg opposite sides)

Results of testing provides useful information in determining the child's level of motoric functioning. Motoric development complements perceptual skill ability in the thorough evaluation.

The second instrument of evaluation, The Ayres Southern California Sensory Integration Test, provides insight into the integration of sensory input into appropriate motor responses. Subtests include figure-ground perception, space visualization, imitation of postures, right-left discrimination and others. The seventeen subtests are considered as a composite picture to assure accuracy of interpretation in defining the nature of sensory integration dysfunction.

The Quick Neurological Screening Test is used as a balanced overview of visuo-motor integration for those beyond the ages of the other two measures.

As a diagnostic team, our primary concern is the whole child; consequently we examine all sensory modes. Kinesthesia and its components, is the logical place to allow an activity oriented "break" in the examination.

In conclusion, let us think of the sensory modes in terms of our ability to shut our or reduce input. We can close our eyes and shut out the auditory stimuli, but awareness continues due to the kinesthetic sense. Sensory stimuli, and accurate integration of them, is responsible for appropriate motor response.

ACADEMIC

Regardless of the order in which professional testers see the child, information from each specialist must be integrated with the academic area. Teachers obviously need to know what the profile strengths and weaknesses means to the child's classroom performance or expectations. Most parents do not seek testing until the danger signs show on a report card. We have also developed a card catalog system of all perceptual teaching materials available to teachers. These are coordinated with recommendations so that we can share the why, the how, and even the actual book, toy or material.

The step after functional vision is one of visual perception. How does the child perceive and process information received? We use the Beery, Frostig, Motor Free Visual Perception Test, ITPA - visual sequential memory, and Monroe (form discrimination). We also find the Jordan Left-Right Reversal Test helpful for answering "Are his reversals beyond the normal expectations for his age?" There are visual perception elements in the SRS, MSSST, and obviously the WRAT, DIAT, and reading tests.**

Auditory perception results are coordinated mainly with the ITPA, Woodcock, and Detroit. Wepman and GFW are used as direct measures. The child's vocabulary, speech and expressive ability are all observed in relation to auditory perceptual skills.

The motor findings are related to observations within the academic testing. Examples are the child's ability to organize on paper, tension and control during pencil-paper tasks and ability to translate verbal directions into action.

Hyperactivity observations are also made. Experience has shown us few children are actually physically hyperactive or absolutely unable to sit quietly. Many are visually or auditorily distractible. These children cannot maintain focus or attention to stimuli. Therefore, their behavior becomes more disorganized and uncontrolled. In some cases, manipularive behavior has been inappropriately labeled as "hyperactivity" (We keep a bag of behavior modification gumdrops in an accessible drawer!). Then some children appear truly unable to control their restless behavior even when visual, auditory and behavior are under control. We refer these children back to their pediatrician or neurologist.

SUMMARY

Hopefully, this will provide you with a rationale for balanced use of three perceptual areas. This is a framework into which you could plug your own tools. We urge you to seriously consider incorporation of functional vision and motor testing as we felt our procedure incomplete without it.

Lavaroni, in Humanity, states,

> "More and more emphasis will have to be placed upon the development of the individual to achieve his full potential...Greater emphasis will have to be placed upon intrinsic rewards, concerns for others, and respect for differences."[16]

In order to judge HOW A CHILD LEARNS we feel you must look at process and perception in auditory, visual and motor areas, relation to one another and to academics.

We include these for your use. They were written for a varied conference audience. Feedback was positive:

DEFINITIONS

Perception - mental interpretation of the sensations received from stimuli (integrated with previous experience)

Form perception and constancy - the Learned ability to identify forms and the consistency of such input

Body Image - complete awareness of one's own body and its possibilities of movement and performance

Distractibility - the inability to hold one's attention fixed on a given task for more than a few seconds.

Directionality - The projecting of right-left, up-down, fore-aft from the body into space

Laterality - complete awareness of the two sides of the body and the ability to use each separately or together as the task demands.

Eye-hand coordination - integration of the visual and kinesthetic systems leading to the point at which the hand becomes the tool to serve the visual mechanism

Figure-ground - ability to detect a difference between the stimuli in the foreground and stimuli in the background.

Visual Terms:

accomodation - eye focusing ability

acuity - sharpness, clarity

binocularity - use of both eyes together

convergence - turning inward of eyes on nearpoint object

focus - adjustment of eyes to obtain a clear image

fusion - two-eyed seeing resulting in a single cortical image perceived from two separate ocular inputs

fixation - the process of directing the eyes toward an object and centering of the image on the fovea

pursuit - the act of following a visual target with the eyes

saccadic - small, precise visual movements of the eyes (changes in fixation)

opthalmologist - a physician specializing in diagnosis and treatment of defects and diseases of the eye

optometrist - a licensed nonmedical practitioner trained to examined eyes for refractive error (optical distortions). Some optometrists specialize in functional vision.

** Illinois Test of Psycholinguistic Abilities - ITPA
School Readiness Survey - SRS
Meeting Street School Screening Test - MSSST
Wide Range Achievement Test - WRAT
Peabody Individual Achievement Test - PIAT
Goldman, Fristoe, Woodcock Test of Auditory Discrimination - GFW

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